

REMARKS

Claim 1 is amended at line 20 to clarify that the recited calcining step forms the diesel particulate filter, consistent with the antecedent in line 1.

Claim 3 is amended to be dependent upon claim 1, following cancellation of the intervening claim.

Claim 14 is amended to place the claim in independent form by reciting the elements of claims 1 and 13, upon which it was dependent. Applicant calculates that no fee is required for the independent claim. In the event that a fee is deemed to be due, the Commissioner is authorized to charge such fees to Applicants' Deposit Account No. 50-0831, in accordance with the final paragraph of this Amendment.

Applicants respectfully request that the finality of the Office Action be withdrawn. The Office Action includes a rejection based upon minor errors that are readily corrected by the amendments herein. Also, Office Action rejects the claims based upon a new reference. Applicants merely seek a fair opportunity to respond to the new grounds and the new cited reference.

In the event that the finality is maintained, Applicants respectfully request that the amendments be entered nevertheless. The amendments merely provide consistency with the antecedent and correct dependency, and so do not add new matter or raise new issues. In the event that the amendments are not deemed to place the claims in condition for allowance, it is requested that they be entered nevertheless, if only for purposes of reducing issues for appeal.

Rejection under Section 112

Claims 1, 3-8, 8 and 13-16 were rejected under 35 U.S.C. § 112.

In particular, claim 1 was rejected as reciting a term without proper antecedent basis. The claim has been amended to refer to the diesel particulate trap, consistent with the term in line 1.

Also, claims 3 and 4 were rejected as dependent upon a cancelled claim. Claim 3 is made dependent upon claim 1. Claim 4 is dependent upon claim 3 and so also dependent upon claim 1.

No grounds were presented for the rejection of the remaining claims. It is believed they were included as dependent upon rejected claims.

It is requested that the amendments be entered and the rejection be withdrawn.

Claim Rejection based upon Voss et al. and Canadian Patent No. 2,299,602

Claims 1, 3-4, 6-8, 13, 15 and 16 were rejected under 35 U.S.C. § 103 as unpatentable over United States Patent Application No. 2003/01243037 by Voss et al., in view of Canadian Patent No. 2,299,602.

Applicant's invention relates to a method for making a diesel particulate filter.

Diesel particulate filters are characterized by walls having open porosity through which the diesel exhaust gases flow. As the exhaust gas passes through the walls, particulate matter, mainly soot, is filtered out onto the walls, and particularly onto the upstream side, referred to in the application as the inlet wall surface. Periodically, the soot deposit is ignited to burn off the deposit and regenerate the filter, referred to as lightoff. It is known to apply a catalyst to facilitate this process. Because of the open porosity, solutions tend to penetrate through the wall, so that the catalyst applied in solution is distributed throughout the wall. However, because the soot accumulates at the inlet side, there is a need for the catalyst near the inlet side and not near the outlet side. Applicant has invented a method for applying the catalyst so that the catalyst penetrates the pores at the upstream or inlet surface where the soot tends to accumulate. Furthermore, penetration is limited to the region near the inlet surface, rather than be wastefully distributed throughout the wall, including near the downstream or outlet surface.

In Applicant's method, this is accomplished by forming a first slurry of a promoter oxide precursor and a refractory inorganic oxide; calcining the first slurry; forming a second slurry with the calcined product, referred to as a supported promoter, and noble metal solution; and calcining the second slurry. The resulting particles are sized and applied to the inlet wall surface, but not the outlet surface. Thus, the particles include both the promoter oxide and the noble metal, penetrate the pores of the inlet surface, and are not distributed at the outlet surface.

Voss et al. is cited to show a catalyzed filter 4 in Fig. 1 that includes a catalyst

comprising a platinum group metal and a cerium component, see paragraph 0052, third sentence. The method of preparation is described in paragraph 0071 and consists of preparing a slurry of ceria particles and other metal oxide particles. The slurry is applied to the substrate and calcined to adhere the material to the substrate, see paragraph 0073. Voss et al. contemplates a catalytic material that is applied as a layer onto the surface, and does not describe particles sized to penetrate the porosity of the wall. Even assuming, for the sake of discussion, particles did penetrate into the pores, Voss et al. results in some pores containing ceria particles and some pores containing other metal oxide particles. In contrast, Applicant's method forms a slurry of the refractory oxide particles with a precursor of cerium or other suitable promoter oxide, and calcines the slurry to form a supported promoter. Thus, each particle that penetrates the pores includes the promoter oxide, e.g., cerium oxide. Nothing in Voss et al. leads the practitioner to calcine a slurry of refractory oxide and a precursor for the promoter oxide, or to apply a slurry in which all the particles include cerium oxide. Thus, Voss et al. does not teach or suggest Applicant's invention.

The rejection acknowledges that Voss et al. only shows a general method of preparation, and relies upon the Canadian patent to disclose the steps of Applicant's method. As discussed in detail in Applicant's Amendment filed November 1, 2005, the Canadian patent describes a catalyst element for treating exhaust gas that flows through the longitudinal channels without passing through the wall. The practitioner would readily appreciate that the substrate in the Canadian patent does not have open porosity

and is not suited for use as a diesel particulate filter. In the substrate in the Canadian patent, catalytic activity occurs from the interaction with the catalyst on the surface of the channel. The practitioner would appreciate that the catalyst needs to be applied as a layer on the surface so as to maximize contact with the gas, i.e., not be buried within pores beneath the surface. Thus, the Canadian patent does not suggest a formulation that is intended to penetrate porosity of a substrate for a diesel particulate filter.

The combination of the references thus fails to point the practitioner to Applicant's method. Voss et al. contemplates a catalytic composition applied as a layer and does not describe a composition adapted to impregnate the surface. Even assuming for discussion that impregnation of some pores is inherent, even though not described or intended by Voss et al., cerium oxide is distributed in some pores, but not others. Voss et al. does not suggest to improve distribution of cerium oxide by applying the compound onto the other metal oxide particles, perhaps because the ceria particles on the surface are deemed adequate. The Canadian patent does not suggest impregnation of the substrate. Thus, it is only after disclosure of Applicant's method, that the rejection is able to select the steps of the Canadian patent, designed to form a dense surface layer, and to apply it to the filter in Voss et al. so as to arrive at a method that improves uniform distribution of the promoter oxide within the porosity of the substrate, while limiting penetration into the inlet wall surface. The teachings of the references themselves do not point the practitioner to this conclusion.

Claim 1 is directed to Applicant's method of making a diesel particulate filter.

The claim calls for calcining a first slurry with the promoter oxide precursor and then calcining a second slurry with noble metal. In Voss et al., ceria are added as distinct particles to the slurry with other metal oxide particles. Nothing in Voss et al. suggests calcining the other metal oxide particles with a precursor so as to apply cerium oxide onto the other metal oxide particles. Moreover, following the step of calcining the supported promoter with a noble metal solution, the claim calls for a composition having an average particle diameter of about 2 to 10 micrometers and about 10% to 80% of the average pore size of the substrate. Nothing in Voss et al. points to sizing the particles to effect penetration, and to limit that penetration to less than 25% of the thickness of the wall, also as call out in the claim. The Canadian patent describes a formulation to form a surface layer on a dense substrate. It does not suggest to apply the formulation to a substrate having open porosity, or to impregnate the pores with the particles instead of forming the surface layer as disclosed therein. It is only with the use of hindsight that the method of the Canadian patent is deemed to provide a formulation that is useful for limited penetration of a substrate having open porosity and for improving distribution of the promoter oxide. Voss et al. contemplates a surface layer and does not point to the uniform distribution of cerium oxide in particles that penetrate the pores. Nor does the Canadian patent point to the distribution within pores of diesel particulate traps. Therefore, references do not lead the practitioner to arrive at the method for forming a diesel particulate trap in claim 1.

Claims 3, 4, 6-8, 13, 15 and 16 are dependent upon claim 1 and so not taught or

suggested by the Canadian patent at least for the reasons set forth with regard to that claim.

Accordingly, it is respectfully requested that the rejection of the claims based upon Voss et al. and the Canadian patent be reconsidered and withdrawn, and that the claims be allowed.

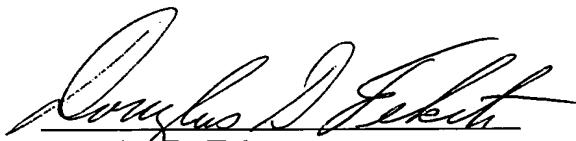
Conclusion

Claim 14 was rejected solely because of it's the dependency to a cancelled claim, but not based upon the cited art. The claim is rewritten in independent form and is therefore now believed to be allowable.

If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,



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